UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,689	02/10/2004	George Anthony Dunn	HSJ920030091US1	9184

35987 7590 11/14/2006

JOSEPH P. CURTIN
1469 N.W. MORGAN LANE
PORTLAND, OR 97229

EXAMINER	
NEGRON, DANIELL L	

ART UNIT	PAPER NUMBER
2627	

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/775,689	DUNN ET AL.	
	Examiner	Art Unit	
	Daniell L. Negrón	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 5, 8, 9, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeman et al U.S. Patent Application Publication No. 2004/0001268 in view of Brown et al U.S. Patent No. 5,682,274.

Regarding claim 1, Deeman et al disclose a method for improving the format efficiency of a hard disk (10) of a hard disk drive, the hard disk drive having a rotary actuator (17) and a read/write head (not shown) having a read element and a write element, the method comprising determining a radial position of the read/write head with respect to the hard disk. Although not explicitly disclosed in the reference, it is considered that Deeman et al determines a radial position of the head since it would be necessary to determine the position of a head with respect to the hard disk in a conventional hard disk drive in order to position enable the head for reading or writing.

Furthermore, Deeman et al disclose a method comprising writing data tracks on the hard disk at varying distance from a center of the hard disk (15) so that edges of the data tracks form a radius of curvature that is different than a radius of curvature formed by edges of subsequent servo samples (page 1, paragraph 13). It is considered that arc 14 created by the actuator arm of Figure 2 represents the arc of curvature of data tracks written to the hard disk.

Deeman et al however, fail to explicitly disclose that the radius of curvature of the edges of the data tracks and the radius of curvature of the edges of the subsequent servo samples are determined based on a step of calculating a varying space distance between the read element and the write element as a function of a radius of the hard disk.

However, Brown et al discloses a method comprising determining the varying spacing distance between a read element and a write element for the purpose for minimizing track misregistration and increasing track density on a hard disk. Furthermore, it is noted that it is well known in the art as evidenced by Brown et al that a radius of curvature and a varying distance between the read element and the write element are functions of the radius of the disk (see Figs. 4 and 5, column 2, lines 50-59).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the disclosure of improving the format efficiency of a hard disk disclosed by Deeman et al with the teachings of calculating a varying space distance between a read head and a write head as a function of the hard disk radius in order to minimize track misregistration and increase track density.

Regarding claim 4, Deeman et al disclose a method further comprising determining lengths of the data tracks based on an angular position of the rotary actuator (page 2, paragraphs 22 and 23).

Regarding claim 11, Deeman et al disclose a method further wherein writing the data tracks on the hard disk further comprises writing data tracks on the head disk so that the edges of the data tracks form a radius of curvature that is smaller than a radius of curvature formed by edges of the subsequent servo samples (page 2, paragraph 22).

Regarding claims 5, 8, 9, and 12-14, apparatus claims 5, 8, 9, and 12-14 are drawn to the apparatus corresponding to the method of using same as claimed in claims 1, 4, and 11. Therefore apparatus claims 5, 8, 9, and 12-14 correspond to method claims 1, 4, and 11, and are rejected for the same reasons of obviousness as used above.

3. Claims 2, 3, 6, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeman et al U.S. Patent Application Publication No. 2004/0001268 as modified by Brown et al U.S. Patent No. 5,682,274 in view of Hrinya et al U.S. Patent No. 6,204,989.

Regarding claims 2 and 3, Deeman et al as modified by Brown et al disclose a method for improving the format efficiency of a hard disk of a hard disk drive comprising all the limitations of claim 1 as discussed above but fail to explicitly show determining lengths of the data tracks from a look-up table. However, Hrinya et al disclose determining the length of data tracks from a look-up table (i.e., data table, column 8, lines 41-59), and further discloses determining the length of data tracks based on a determination of the arc of the rotary actuator, the determined position of the read/write head with respect to the hard disk, and the physical offset between the read element and write element (column 4, lines 6-39 and column 6, lines 41-59).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method disclosed by Deeman et al as modified by Brown et al with the disclosure of Hrinya et al in order to write data at using desired distances and other given variables hence increasing the data density of the hard disk drive.

Regarding claims 6 and 7, apparatus claims 6 and 7 are drawn to the apparatus corresponding to the method of using same as claimed in claims 2 and 3. Therefore apparatus

claims 6 and 7 correspond to method claims 2 and 3, and are rejected for the same reasons of obviousness as used above.

Regarding claim 10, claim 10 has limitations similar to those treated in the above rejection of claim 2, and are met by the references as discussed above.

Response to Arguments

4. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new grounds of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniell L. Negrón whose telephone number is 571-272-7559. The examiner can normally be reached on Monday-Friday (8:30am-5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DLN
November 12, 2006

WILLIAM KORZUCH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600